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Recent Developments in Mortgage Markets

MORTGAGE markets have changed significantly in recent years. For example, since 1978:

- Thrift institutions—subject to the vagaries of deposit inflows—have accounted for only 50 percent of mortgage originations, down noticeably from their 57 percent share in 1976–78. Mortgage companies, with their excellent access to capital markets, have increased their share of originations from 16½ percent in 1976–78 to 23½ percent.
- Local governments have become important suppliers of mortgage funds through the issue of tax-exempt mortgage revenue bonds.
- Secondary markets, bringing funds to mortgage markets from nontraditional investors, have become increasingly important. In 1979–81:III, 46 percent of home mortgages originated were sold in secondary markets, up sharply from 36 percent in 1976–78.
- The average maturity of savings and loan associations' liabilities has shortened, as depositors shifted funds to 6-month money market certificates from longer term certificates. This shift exacerbated the asset/liability maturity mismatch and has exposed the associations to severe financial strains.
- Major regulatory changes have blurred the distinctions between thrift institutions, which hold the bulk of their assets as home mortgages, and commercial banks, which hold relatively few of their assets in this form.
- A number of alternatives to the standard long-term fixed-payment mortgage have been developed and their use seems likely to increase in years to come.

This article will discuss these developments, interpreting many of them as evolutionary responses to changes in the financial climate. More specifically, higher rates of inflation—and the high and volatile interest rates associated with higher inflation rates—will frequently be cited as factors prompting these developments. The first section focuses on the behavior of mortgage lenders, both originators and ultimate holders of mortgage assets. The following section turns to the secondary market and mortgage-backed securities—the principal vehicle nontraditional investors have used to enter the mortgage market. The changing regulatory framework is discussed in the third section, with emphasis on the introduction of short-term variable ceiling certificates at depository institutions and on the Depository Institutions Deregulation and Monetary Control Act of 1980. Relevant provisions of the Economic Recovery Tax Act of 1981—specifically provisions relating to Individual Retirement Accounts and All Savers Certificates—are also discussed in this section. Alternative mortgage instruments are discussed in the final section.

Mortgage lenders

This section discusses the mortgage activity of mortgage originators and ultimate holders of mortgage assets. the discussion calls attention to both cyclical and secular elements in recent mortgage activity, providing background for the remainder of the article.

Mortgage originators.—Reduced inflows of funds—net new savings (exclusive of interest credited) and net mortgage loan repayments—at thrift

Table 1.—Originations of Long-Term Mortgage Loans, One- to Four-Family Nonfarm Houses, 1970–81

Year	Depository institutions			Mortgage companies	Federally sponsored credit agencies [1]	Total [2]
	Commercial banks	Thrifts: Savings and loan associations	Thrifts: Mutual savings banks			
	Billions of dollars					
1970	7.8	14.8	2.1	8.9	1.4	25.6
1971	12.6	26.6	3.5	12.5	1.8	57.8
1972	17.7	36.7	5.1	13.3	2.0	75.9
1973	18.8	38.4	5.9	12.7	2.4	78.1
1974	16.1	30.9	3.9	13.0	2.5	67.5
1975	14.4	41.2	4.3	14.0	3.9	77.9
1976	24.5	61.9	6.4	15.7	2.7	112.2
1977	36.7	86.3	8.7	25.1	3.1	162.0
1978	43.9	90.0	9.4	34.4	4.8	185.0
1979	40.7	82.6	9.0	45.3	4.4	185.6
1980	28.8	61.1	5.4	29.4	4.4	133.8
1981 [3]	15.8	34.1	3.3	19.0	3.6	77.5
	Percent of total					
1970	31.9	41.6	5.9	25.0	3.9	100
1971	21.8	46.0	6.1	21.6	3.1	100
1972	23.3	48.4	6.7	17.5	2.6	100
1973	23.8	49.5	7.5	16.1	3.0	100
1974	23.9	45.8	5.8	19.3	3.7	100
1975	18.5	52.9	5.5	18.0	3.7	100
1976	21.7	54.9	5.7	13.9	2.4	100
1977	22.7	53.2	5.4	15.9	1.9	100
1978	23.7	48.6	5.1	18.6	2.6	100
1979	21.8	44.4	4.8	24.3	2.4	100
1980	21.5	45.7	4.0	22.0	3.3	100
1981 [3]	20.4	44.0	4.3	24.5	4.8	100

1. Includes Government National Mortgage Association.
2. Includes data not shown separately.
3. Three quarters, not at annual rate.

Source: U.S. Department of Housing and Urban Development.

institutions (savings and loan associations and mutual savings banks) account for much of the decline in their share of mortgage originations since 1978. At insured savings and loan associations (S&L's), the inflow of funds fell $24.3 billion from 1978 to 1980 while mortgage originations fell $28.9 billion; at mutual savings banks, the inflow of funds fell $6.2 billion while mortgage originations dropped $4 billion (tables 1 and 2).[1] The slowing of the inflow of funds, in turn, is largely attributable to the high interest rates since 1978. When rates are high, savings inflows at thrifts tend to be low, as individuals shift their savings toward instruments paying market-determined yields from the below-market regulated yields paid on savings accounts at thrifts. The proliferation of money market mutual funds in the late 1970's made it easier for individuals to move their saving to high-yield instruments. The savings flow would undoubtedly have been even slower if depository institutions had not been permitted in June 1978 to begin offering short-term certificates with yields linked to the rate on 6-month Treasury bills. Loan repayments, the other important component of funds inflow, fall when interest rates rise because many loan repayments occur on the occasion of a house sale, and high interest rates discourage house sales. Furthermore, high rates on new mortgages induce house buyers to assume outstanding low-rate mortgages rather than take out an entirely new mortgage; repayments by house sellers, therefore, fall.

Other factors, two of which deserve explicit mention, contributed to the decline in thrift institutions' share of originations. First, secular decline in savings banks' originations—traceable to weak housing markets, declining population, and slow economic growth in the Northeast, where 94 percent of savings banks are located—continued in 1979–81. Second, interest rates on conventional mortgages, in which thrifts specialize, pressed against usury ceilings in some States. (Government-underwritten mortgages, on the other hand, were generally exempt from usury laws. This exemption was extended to conventional mortgages by the Depository Institutions Deregulation and Monetary Control Act of 1980.)

Mortgage companies do not depend on deposit flows or mortgage repayments for loanable funds and enjoy excellent access to capital markets via passthrough certificates (discussed in the next section). Mortgage companies' share of originations, accordingly, was 6 percentage points higher in the first three quarters of 1981 than it had been in 1978. Mortgage companies have long been the principal originators of the mortgages insured by the Federal Housing Administration (FHA) or guaranteed by the Veterans Administration (VA), and the domination of this federally underwritten sector of the market by mortgage companies has been increasing. Since 1978, mortgage companies have accounted for 82 percent of all federally underwritten long-term mortgage loans on 1- to 4-family nonfarm homes, up almost 15 percentage points from their 1970–72 share (table 3). Moreover, during the 1970's mortgage companies became important originators of conventional mortgages, largely as a result of a 1971 change in the Federal National Mortgage Association's (FNMA's) charter—a change that authorized FNMA to begin purchasing conventional mortgages. (FNMA and three other housing credit agencies are described on page 21.) Since 1978, mortgage companies have originated 8.4 percent of all long-term conventional mortgage loans on 1- to 4-family homes, and conventional originations have accounted for 28.5 percent of total mortgage company originations; in 1970–71, these shares had been 1.6 percent and 4.7 percent, respectively.

Mortgage holders.—Mortgage originators need not, of course, hold mort-

Table 2.—Inflow of Funds at Thrift Institutions, 1970–81

(Billions of dollars)

Year	Insured savings and loan associations			Mutual savings banks		
	Net new savings	Net mortgage repayments	Total	Net new savings	Net mortgage repayments	Total
1970	5.3	13.2	18.5	0.9	4.0	4.9
1971	20.7	20.2	40.9	5.7	5.7	11.4
1972	23.9	25.6	49.5	5.5	7.4	12.9
1973	10.5	26.7	37.2	−.4	7.6	7.2
1974	4.7	23.2	27.9	−2.8	6.6	3.8
1975	29.3	28.2	57.5	4.8	7.1	11.9
1976	34.4	37.3	71.7	5.3	7.8	13.1
1977	32.0	48.5	80.5	2.8	10.1	13.0
1978	23.5	52.2	75.7	−.6	10.5	10.0
1979	16.0	49.7	64.7	−7.0	10.0	3.0
1980	10.7	40.7	51.4	−4.9	8.7	3.8
1981	−25.5	34.3	8.8	−13.6	(1)	(1)

1. Not available.

Source: Federal Home Loan Bank Board and National Association of Mutual Savings Banks.

Table 3.—Originations of Long-Term Mortgage Loans on One- to Four-Family Nonfarm Houses by Mortgage Companies, 1970–81

(Billions of dollars)

Year	Federally underwritten		Conventional		(1) as percent of (2)	(3) as percent of (4)	(3) as percent of (1) + (3)
	Mortgage companies	Total	Mortgage companies	Total			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1970	8.5	12.6	0.4	29.0	67.2	1.6	4.7
1971	11.9	17.3	.6	40.0	66.6	1.6	5.0
1972	11.2	16.2	2.2	59.7	68.8	3.6	16.3
1973	8.6	12.8	4.1	66.4	67.1	5.2	32.3
1974	9.4	12.4	3.7	55.1	75.4	6.6	28.1
1975	10.9	15.1	3.1	62.8	72.3	4.9	21.9
1976	12.5	17.4	3.3	95.4	71.8	3.4	20.8
1977	19.9	25.4	5.8	138.6	78.3	4.2	22.6
1978	24.8	30.6	10.5	164.4	78.2	6.8	30.4
1979	32.9	38.5	12.3	149.1	83.4	8.4	27.3
1980	21.7	27.1	7.7	100.7	69.8	7.2	26.1
1981 [1]	18.0	14.6	6.7	92.5	82.2	10.7	35.8

1. Three quarters, not at annual rate.

Source: U.S. Department of Housing and Urban Development.

1. Unless otherwise noted, data on mortgages relate to long-term loans on 1- to 4-family nonfarm houses.

Selected Housing Credit Agencies

The *Federal National Mortgage Association* (FNMA or Fannie Mae) provides funds to mortgage originators through its purchases of mortgages on the secondary market. It became a privately owned corporation in 1968. Previously, it was wholly owned by the Federal Government (1938–54) and under mixed ownership (1954–68). FNMA is subject to supervision by the Secretary of Housing and Urban Development and, regarding its issues of securities, by the Secretary of the Treasury.

FNMA acquires home mortgages through three types of programs. First, biweekly auctions are held at which FNMA offers commitments to purchase home mortgages. Mortgage originators who want to obtain a commitment from FNMA submit bids that specify the volume of mortgages for which commitments are sought and the yield to FNMA. Delivery of the mortgages during the 4-month commitment period is at the option of the mortgage originator.

Second, FNMA sells 9- and 12-month convertible, standby commitments at posted prices, i.e., outside the auction system. After holding a standby commitment for 4 months, the holder may convert it to a 4-month commitment, with the yield to FNMA being the weighted average yield at the most recent auction. Under a standby commitment, delivery of the mortgages is at the option of the mortgage originator.

Third, FNMA initiated a number of new mandatory delivery programs in 1981. For each of these, FNMA specifies a yield at which it will purchase mortgages; generally, delivery must be made within 1 to 4 months.

FNMA finances its operations by the sale of debentures and notes in capital markets and by charging commitment fees. Although its notes and debentures are classified as "Federal Agency Securities," they are not obligations of the Federal Government and are not federally guaranteed.

The *Government National Mortgage Association* (GNMA or Ginnie Mae) assists in providing mortgage credit and in stabilizing the financing of selected types of mortgages. It was established within the Department of Housing and Urban Development in 1968 to take over some of the activities that previously had been performed by FNMA. Many of those activities—notably the servicing and disposal of mortgages it purchased or that were transferred to it, and the purchase and resale of mortgages at yields that subsidized housing—have since been reduced to very low levels.

Currently, GNMA's primary involvement in the mortgage market is through its mortgage-backed securities program. Since 1970, GNMA has guaranteed the timely payment of principal and interest on passthrough certificates backed by pools of federally underwritten mortgages. (In a pool backing GNMA passthroughs, the individual mortgages are insured by the Federal Housing Administration or guaranteed by the Veterans Administration. Thus, GNMA's guarantees of the passthrough certificates mainly cover the timing of the cash flow.)

The *Federal Home Loan Mortgage Corporation* (FHLMC, The Mortgage Corporation, or Freddie Mac) provides assistance to the secondary market for home mortgages by supplying liquidity through its purchases of mortgages. Its primary concern is the secondary market for conventional home mortgages, i.e., those not insured by the Federal Housing Adminstration or guaranteed by the Veterans Adminstration. The FHLMC was chartered by Congress in 1970 as a private corporation. It is owned by the 12 Federal home loan banks (which, in turn, are owned by their member institutions).

FHLMC periodically auctions commitments to purchase mortgages. Auctions for 8-month commitments, with delivery at the option of the mortgage originator, are held monthly. Auctions for the "immediate purchase" of mortgages—under which mortgages must be delivered to FHLMC within 60 days—are held weekly. Like FNMA, FHLMC decides after each auction which bids to accept.

Mortgages acquired by the FHLMC are placed in pools and used to back the issuance of two kinds of certificates: participation certificates and guaranteed mortgage certificates. FHLMC guarantees the timely payment of interest and principal to owners of participation certificates, and the semi-annual payment of interest and annual repayment of principal to owners of guaranteed mortgage certificates. Sales of the two kinds of certificates provide FHLMC with most of the funds it needs to operate its mortgage purchase programs.

The *Federal Home Loan Bank System* has supervisory and regulatory authority for system members and provides credit to members to stabilize their mortgage lending. The System was established by an act of Congress in 1932. It is supervised by the Federal Home Loan Bank Board, an agency in the executive branch of the Federal Government. The System consists, in addition to the Board, of 12 Federal home loan banks, which are owned by their member institutions.

The Board has supervisory and regulatory authority for all federally chartered savings and loan associations. These associations are required by law to be members of the System. In addition, about 2,000 State-chartered savings and loan associations have joined voluntarily in order to qualify for insurance by the Federal Savings and Loan Insurance Corporation, as have over 80 mutual savings banks and few life insurance companies.

The 12 banks make loans ("advances") to their member institutions, serving as a central source of credit. These advances meet heavy withdrawals of deposits, smooth seasonal imbalance between deposits and loan disbursements, and allow expansion of mortgage lending. The primary source of financing for the banks' advances is the sale of consolidated obligations in the money and capital markets. (Like FNMA's debt, these obligations are classfied as "Federal Agency Securities," but they are not obligations of the Federal Government and are not federally guaranteed.) Deposits received from member banks also help finance advances.

gage assets .in portfolio; mortgage companies, for example, sell all of the mortgages they originate. Nevertheless, there is considerable overlap between mortgage originators and mortgage holders, as is clear from a comparison of tables 1 and 4. During 1970–78, for example, depository institutions—commercial banks and thrift institutions—accounted for about 78 percent of originations and 72 percent of the increase in holdings of mortgages. This overlap has been smaller, but still significant, since 1978; depository institutions have accounted for about 71 percent of originations and 50 percent of the increase in holdings.[2]

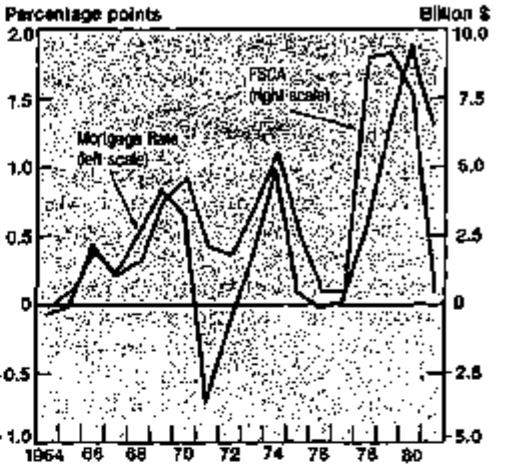
Commercial banks, life insurance companies, and, to a lesser extent, mutual savings banks are diversified investors that select assets for their portfolios on the basis of relative yields. (Risk, cash flow, and maturity are also important considerations, of course.) S&L's, on the other hand, have tended year after year to devote 70–80 percent of the increase in their assets to home mortgages. The year 1980 was an exception to this rule; mortgages accounted for only 53 percent of total financial assets acquired by S&L's, by far the lowest percentage since World War II.

Federally sponsored credit agencies (FSCA) tend to increase their holdings of home mortgages more rapidly when interest rates rise and less rapidly when interest rates decline. FNMA and FHLMC (the Federal Home Loan Mortgage Corporation) account for the bulk of FSCA activity in mortgage markets. An important part of FNMA and FHLMC operations consists of selling commitments to purchase mortgages from mortgage originators. Delivery of the mortgages to these agencies during the commitment period is at the option of the loan originators. If mortgage rates fall during the committment period, originators find that they can obtain better prices for their loans by selling their mortgages to other buyers than they can by "taking down" their FNMA/FHLMC commitments. Thus, falling mortgage rates—or, more generally, mortgage rates that rise by less than had been expected—are associated with decreased acquisitions of mortgages by the FSCA. Conversely, mortgage rates that rise by more than had been expected are associated with increased acquisitions by the FSCA (chart 1).[3]

Since 1978, mortgage pools have been second only to S&L's as a source of mortgage funds, and State and local governments—previously a negligible source—have supplied almost as much as the FSCA's. The remarkable rise of these two types of lenders is discussed in the following section.

CHART 1

Net Acquisition of Home Mortgages by FSCA's and Change in Mortgage Rate, 1964-81



NOTE.—FSCA's are federally sponsored agencies.
Mortgage rate changes are changes in the effective rate on conventional loans originated for the purchase of newly built single-family homes.
Latest data shown are for the first half of 1981.
DATA: FHLBB, FRB

U.S. Department of Commerce, Bureau of Economic Analysis

Secondary markets

Secondary markets allow mortgage originators to sell mortgages that they do not wish to hold in portfolio and allow ultimate investors to hold mortgage assets without becoming involved in the mortgage origination and servicing processes. Secondary market sales rose $50 billion (360 percent) from 1970 to 1980; proceeds of these sales financed a good part of the increase in originations in the primary market during the period.

2. The steep decline in depository institutions' share of the net increase in holdings since 1978 reflects the slow inflow of funds—which has limited the amount that these institutions have available to invest in all types of assets, mortgages included—and the increased importance of mortgage pools and State and local governments in mortgage markets.

3. Federal home loan bank (FHLB) loans to S&L's follow the same general pattern as FSCA holdings of mortgages: When mortgage rates rise, FHLB loans increase faster than when mortgage rates decline. Rising mortgage rates are usually associated with declining net deposit flows at S&L's—declining in absolute terms, in percentage rates of change, or relative to mortgage demand—and S&L's supplement these declining flows with FHLB loans.

Table 4.—Increase in Home Mortgage Loans Held, by Type of Institution, 1970–81

Year	Depository institutions			Life insurance companies	Federally sponsored credit agencies	Mortgage pools	State and local governments	Households	Other	Total
	Commercial banks	Thrifts: Savings and loan associations	Thrifts: Mutual savings banks							
	Billions of dollars									
1970	6.9	6.8	1.1	−0.9	4.6	1.2	0.1	−6.3	1.5	16.0
1971	6.7	16.4	1.2	−2.1	2.1	4.3	.1	3.0	−.6	23.9
1972	9.0	24.6	2.7	−2.3	1.8	4.3	.1	3.3	.2	43.7
1973	11.0	21.5	2.8	−1.9	3.5	3.2	.6	3.0	1.4	44.9
1974	6.6	13.9	.7	−1.4	6.5	3.9	.7	3.3	.2	33.3
1975	2.1	23.2	.8	−1.4	2.5	7.3	.8	3.0	3.1	41.4
1976	9.2	36.9	3.1	−1.5	.5	11.9	.8	3.0	−.2	65.7
1977	18.9	49.9	4.5	−1.4	.5	15.7	.3	8.1	3.0	98.4
1978	24.1	45.4	4.6	−.3	9.0	12.4	1.9	9.7	3.5	109.3
1979	20.0	38.4	2.4	1.8	9.2	22.8	4.7	9.0	4.2	112.5
1980	11.3	24.8	.5	1.7	7.5	18.0	7.5	6.3	3.4	81.0
1981 [1]	15.6	18.1	.6	.2	4.6	12.0	6.9	6.1	6.3	68.4
	Percent of total									
1970	6.0	45.3	7.3	−6.0	30.7	8.0	.7	−2.0	10.0	100
1971	19.1	54.8	4.0	−7.0	7.0	14.4	.3	10.0	−2.7	100
1972	20.6	56.3	6.2	−5.3	4.1	9.8	.2	7.6	.5	100
1973	24.5	47.9	6.3	−4.2	7.8	7.1	1.3	6.7	3.1	100
1974	19.8	41.7	2.1	−4.2	19.5	9.9	2.1	11.4	.8	100
1975	5.1	56.0	1.9	−3.4	6.0	17.6	1.9	7.2	7.5	100
1976	14.0	56.2	4.7	−2.3	.8	18.1	1.2	7.6	−.3	100
1977	19.0	50.2	4.5	−1.4	.5	15.8	.2	8.1	3.0	100
1978	22.0	41.5	4.2	−.3	8.2	11.3	1.7	8.9	3.2	100
1979	17.8	34.1	2.1	1.6	8.2	20.3	4.2	8.0	3.7	100
1980	14.0	30.6	.7	2.1	9.4	22.2	9.3	7.8	4.2	100
1981 [1]	22.8	26.5	.9	.3	6.7	17.5	10.1	7.5	7.7	100

1. Three quarters, at seasonally adjusted annual rate, preliminary.
Source: Federal Reserve Board.

Four factors explain the increase in secondary market activity (table 5). First, as a healthy part of an expanding economy, secondary market activity would be expected to increase as a matter of course; "business as usual," with no innovations in the market and unchanged behavior patterns of market participants, would result in increased activity. Also, rising house prices inflate dollar measures of activity. Note, for example, that the size of the average mortgage rose about 130 percent from 1970 to 1980. Thus, even if there had been no increase in the number of mortgages sold on secondary markets, the value of sales would have risen from $14.2 billion in 1970 to about $32 billion in 1980. Perhaps as much as one-half the increase in sales on secondary markets, therefore, represents the effects of economic growth and rising prices.

Second, in 1971, FNMA and FHLMC began to purchase conventional mortgages. (These agencies also standardized underwriting practices on conventional mortgages and sponsored the development of an information sharing network that further stimulated secondary market activity in conventional mortgages.) Prior to this time, FNMA purchased only federally underwritten mortgages and FHLMC did not exist. Conventionals accounted for 70 percent of total originations in 1971; authorizing these agencies to purchase conventionals, therefore, paved the way for much enlarged secondary market sales.

The new market for conventionals enabled S&L's to increase their mortgage sales. (Most S&L originations are conventionals.) S&L's were induced to avail themselves of this new market because the demand for mortgages rose more quickly than deposit inflows and mortgage repayments. This disparity was the third factor in increased secondary market activity. The top panel in table 6 shows these two sources of funds at all federally insured S&L's, home mortgages made by these S&L's, and their net secondary market purchases of mortgages.[4]

Table 5.—Sales and Purchases of Long-Term Mortgage Loans on One- to Four-Family Nonfarm Houses, 1970–81

Year	Depository institutions			Federally sponsored credit agencies [1]	Mortgage pools	Mortgage companies	Total [2]
	Commercial banks	Thrift institutions: Savings and loan associations	Thrift institutions: Mutual savings banks				
	Sales in billions of dollars						
1970	1.7	0.8	0.8	1.6	0.1	9.6	14.2
1971	2.0	1.7	.2	1.9	.2	12.4	18.5
1972	2.2	2.9	.3	3.8	.2	14.3	24.1
1973	2.0	2.8	.2	4.8	.4	16.0	24.9
1974	1.6	3.1	.2	2.5	.7	14.9	23.1
1975	2.9	4.7	.2	6.7	.5	14.5	29.7
1976	4.0	7.7	.5	10.8	.5	17.3	40.9
1977	5.9	13.0	.2	7.6	1.3	27.3	55.4
1978	6.9	16.0	.3	9.1	1.4	35.0	67.6
1979	6.6	18.1	.5	5.8	.8	44.4	78.6
1980	7.5	16.5	.7	7.2	3.2	31.5	65.8
1981 [3]	2.9	8.2	.3	6.1	2.6	20.4	39.8
	Sales as percent of total						
1970	12.0	5.6	2.1	11.3	.7	67.6	100
1971	10.8	9.2	1.1	10.3	1.1	67.0	100
1972	9.1	12.0	.8	15.8	.8	59.3	100
1973	8.0	11.2	.8	17.3	1.6	80.2	100
1974	6.9	13.4	.9	10.8	3.0	64.5	100
1975	9.8	15.8	.7	22.6	1.7	48.8	100
1976	9.8	18.9	1.2	26.4	1.2	42.3	100
1977	10.5	23.5	.4	13.7	2.3	49.3	100
1978	10.0	23.1	.4	13.4	2.1	51.6	100
1979	8.6	23.6	.7	7.6	1.0	58.0	100
1980	11.4	25.6	1.1	10.9	4.9	47.9	100
1981 [3]	7.2	20.6	.7	12.8	6.5	51.3	100
	Purchases in billions of dollars						
1970	.5	3.4	1.4	5.4	1.8	.1	12.4
1971	1.1	6.6	1.9	3.7	3.9	.4	18.3
1972	1.0	9.5	2.7	5.0	4.8	1.4	25.1
1973	.9	5.9	2.0	7.4	4.2	1.4	22.6
1974	.4	4.8	1.0	3.8	5.3	.9	22.0
1975	.2	7.2	1.1	10.7	11.2	.8	31.9
1976	.8	11.1	2.1	9.6	16.4	2.2	42.8
1977	1.8	13.2	2.8	9.8	23.4	4.1	55.7
1978	1.7	10.3	2.2	12.8	23.2	3.8	53.0
1979	2.2	11.6	2.6	15.3	29.9	5.7	73.2
1980	4.3	12.4	1.9	14.4	26.7	3.4	63.9
1981 [3]	2.2	7.0	.2	8.2	15.8	3.2	41.3
	Purchases as percent of total						
1970	2.7	25.4	10.4	40.3	13.4	.7	100
1971	6.0	36.3	10.4	20.2	21.6	2.2	100
1972	4.0	37.8	10.8	19.9	19.1	5.6	100
1973	4.0	26.1	8.8	32.7	18.6	6.2	100
1974	1.7	20.9	4.3	28.3	27.4	3.9	100
1975	.6	22.6	3.4	33.5	35.1	2.5	100
1976	1.9	25.9	4.9	22.4	38.3	5.1	100
1977	3.2	23.7	5.2	16.7	42.0	7.4	100
1978	2.7	16.8	4.4	29.8	38.8	8.0	100
1979	3.0	15.8	3.6	21.8	40.8	7.8	100
1980	6.2	17.7	1.4	20.6	38.2	4.8	100
1981 [3]	5.3	16.9	.5	19.9	38.3	7.7	100

1. Includes Government National Mortgage Association.
2. Includes data not shown separately. Total sales may differ from total purchases because of the incomplete nature of the survey.
3. Three quarters, not at annual rate.
Source: U.S. Department of Housing and Urban Development.

From 1970–72 to 1978–80, the amount of mortgages rose twice as fast as deposits and repayments.

Regional developments are an important aspect of increased S&L purchases and sales in the secondary markets.[5] In the early 1970's, inflows of funds were substantially larger than mortgages made in virtually all FHLB districts. In the "Eastern" and "Central" districts, mortgage loans amounted to only 41 percent of net deposits and repayments in 1970–72 (bottom panel of table 6); in the "Southern" and "Western" districts, they amounted to only 45 percent (middle panel). S&L's in all districts used their "surplus" funds to purchase mortgages on the secondary market. By 1978–80, the picture had changed substantially. S&L's in the Eastern and Central districts had reduced their net purchases, as mort-

4. The net purchases figures in table 6 differ from those in table 5 because table 6 applies only to insured associations, and table 5 covers all operating associations. Neither set of data includes sales of federally insured passthrough securities out of portfolio or acquisitions of federally insured passthroughs. Adjusting the figures to reflect these sales and acquisitions would probably reduce net sales somewhat for the entire period. The general pattern, however, with positive net sales in recent years, would not be changed much. See David F. Seiders, "Major Developments in Residential Mortgage and Housing Markets Since the Hunt Commission," *Journal of American Real Estate and Urban Economics Association* 8 (Spring 1980): 17–19.

5. See Dwight M. Jaffee and Kenneth T. Rosen, "The Use of Mortgage Passthrough Securities," in *New Sources of Capital for the Savings and Loan Industry*, Proceedings of the Fifth Annual Conference, December 6–7, 1979, Federal Home Loan Bank of San Francisco.

gages had risen to 66 percent of net deposits and repayments. In the Southern and Western districts, S&L's had become net sellers, as rapid economic growth had increased the demand for mortgages to almost 75 percent of net deposits and repayments.

The fourth factor in the increased activity in the secondary market was the introduction of new forms of securities backed by mortgage pools. A mortgage pool is a collection of mortgages that constitutes the asset against which securities are issued.[6] Table 7 lists the distinguishing characteristics of the most important types of securities backed by mortgage pools. By far the most common type of these securities is the Government National Mortgage Association (GNMA) passthrough certificate; these certificates are discussed immediately below. Three of the others—two types issued by the FHLMC and privately insured passthroughs—are similar in many respects to GNMA passthroughs. Much of the discussion of GNMA passthroughs applies to these three securities as well. Tax-exempt mortgage revenue bonds, however, are quite unlike the other mortgage-backed securities listed in table 7 and do receive explicit discussion.

Passthrough certificates.—More than 800 private mortgage originators are active issuers of GNMA passthroughs, and since 1978 about 70 percent of the FHA/VA mortgages that have been originated have been put in GNMA pools. When mortgages are placed in a GNMA pool, the mortgage originator earns a fee for servicing the mortgages and for "passing through" principal and interest payments to owners of the passthrough certificates. GNMA passthroughs carry a coupon rate 50 basis points below the rate on the mortgages in the pool; 44 basis points go to the originator as a servicing fee and 6 basis points go to GNMA as an insurance fee. In return for its six basis points, GNMA guarantees the timely payment of principal and interest to the owners of the passthroughs.

Passthroughs are designed to appeal to institutional investors, such as pension funds and life insurance companies, who do not want to become involved in the origination and servicing of mortgages but who value the attractive long-term yield and the high cash flow each month that characterize mortgages. Passthroughs also appeal to commercial banks and thrift institutions because the certificates are considered eligible mortgage investments by most regulatory bodies and qualify as mortgage investments in determining the tax treatment of thrifts.

Attracting nontraditional investors—e.g., pension funds and State and local governments—to the secondary mortgage market has increased communication between mortgage and bond markets. In this way, passthroughs may have contributed to increased volatility of mortgage rates, although other factors may also have been at work.[7] Whatever the entire explanation, the increased volatility

Table 6.—Inflow of Funds, Mortgage Lending, and Secondary Market Purchases at Insured Savings and Loan Associations, 1970–80

[Billions of dollars]

Year	Funds			Home mortgage loans made	(4) as a percent of (3)	Net secondary market purchases
	Net deposits	Net mortgage repayments	Total			
	(1)	(2)	(3)	(4)	(5)	(6)
	All Federal Home Loan Bank Districts					
1970	10.8	13.2	24.0	9.9	41.3	2.8
1971	27.3	20.2	47.5	18.8	39.5	5.4
1972	32.0	25.8	57.8	25.9	45.0	6.9
1973	19.9	26.7	46.6	27.6	59.0	3.8
1974	15.6	23.2	38.8	22.1	57.0	2.4
1975	42.1	28.2	70.3	30.0	42.7	3.3
1976	49.7	37.3	87.0	44.9	51.5	4.4
1977	50.2	48.5	98.7	61.2	62.1	.7
1978	44.2	52.2	96.4	64.4	66.8	−4.5
1979	38.9	49.7	88.6	60.6	67.3	−6.8
1980	40.9	40.7	81.6	41.3	50.6	−2.9
	Southern and Western Districts [1]					
1970	2.4	3.7	6.1	2.8	45.9	.5
1971	8.6	5.9	14.5	5.5	37.9	1.2
1972	9.9	7.2	17.1	6.5	49.7	1.2
1973	5.5	7.7	13.2	8.8	66.7	.2
1974	4.2	6.9	11.1	7.5	67.6	−.2
1975	14.0	9.0	23.0	10.7	46.5	−.6
1976	17.4	12.6	30.0	17.8	59.3	−2.2
1977	17.7	18.3	34.0	25.2	74.1	−8.0
1978	15.2	17.7	32.9	25.6	77.8	−8.0
1979	15.7	17.0	32.7	25.5	78.3	−7.8
1980	12.5	14.0	26.5	16.7	63.0	−5.4
	Eastern and Central Districts [2]					
1970	8.4	9.5	17.9	7.1	39.7	2.1
1971	18.7	14.3	33.0	12.8	38.8	4.2
1972	22.1	18.4	40.5	17.4	43.0	5.7
1973	14.4	19.0	33.4	18.7	56.0	3.6
1974	11.4	16.3	27.7	14.6	52.7	2.6
1975	28.1	19.2	47.3	19.3	40.8	3.9
1976	32.3	24.7	57.0	27.0	47.4	6.6
1977	32.6	32.2	64.7	36.1	55.8	8.7
1978	29.0	34.5	63.5	38.8	61.1	3.6
1979	23.2	32.7	55.9	34.0	60.8	1.3
1980	28.4	26.7	55.1	24.5	44.5	2.6

1. Little Rock, San Francisco, and Seattle.
2. Boston, New York, Pittsburgh, Atlanta, Cincinnati, Indianapolis, Chicago, Des Moines, and Topeka.

Source: Federal Home Loan Bank Board.

6. For more detailed discussion of mortgage pools and mortgage-backed securities, see: Charles M. Sivesind, "Mortgage-Backed Securities: The Revolution in Real Estate Finance," *Federal Reserve Bank of New York Quarterly Review* 4 (Autumn 1979): 1–10; David F. Seiders, "The GNMA-Guaranteed Passthrough Security: Market Development and Implications for the Growth and Stability of Home Mortgage Lending," Staff Economic Studies No. 108, (Washington, D.C.: Board of Governors of the Federal Reserve System, December 1979); Mary A. Fruscello, "The Mortgage Corporation and the Secondary Mortgage Market," Monograph Series No. 5, (Washington, D.C.: Federal Home Loan Mortgage Corporation, June 1977); Douglas E. Johnson, "The Implications of a GNMA Depository," *Mortgage Banker* 40 (September 1980): 48–51; James J. Connolly, "The GNMA Market: A Retrospective," *Mortgage Banker* 40 (September 1980): 15–19; Richard G. Marcis, "Mortgage-Backed Securities: Financial Alternatives for Savings and Loan Associations," *Federal Home Loan Home Bank Board Journal* 11 (November 1978): 5–11.

7. One reason for doubting that increased communication is the sole explanation is that diversified investors—commercial banks, mutual savings banks, and life insurance companies—have been important participants in both markets for years. Other factors that may have contributed to the increased volatility include: an increased sensitivity to inflationary trends on the part of mortgage lenders, the rising importance of mortgage companies and their dependence on money and capital markets for loanable funds, and differential rates of deposit increase at commercial banks and thrift institutions.

itself is apparent (table 8). During the 1950's, mortgage rates typically peaked and troughed from 4 to 7 months after the peak or trough in Treasury bond yields (column 7) and the cyclical amplitudes of mortgage rates were much smaller than those of Treasury bond yields whether measured in basis points (columns 4, 9, and 11) or in percent (columns 5, 10, and 12). During the 1970's and into the 1980's, however, the lags were noticeably shorter and, measured in basis points, the cyclical amplitudes of mortgage rates were larger than those of Treasury bond yields.

Volatility aside, mortgage-backed securities are important primarily to the extent that they result in increased and more stable flows of funds to mortgage originators and, thence, to mortgage borrowers. Not all of the proceeds from the sale of mortgage-backed securities constitute, however, a net addition to the supply of loanable funds in mortgage markets. Some of the funds presumably would have found a different channel to the mortgage market—perhaps through the direct purchase of mortgages, the purchase of debt of FSCA's or the origination of new mortgage loans. Nevertheless, it is generally agreed that passthroughs and like instruments have increased the supply of mortgage funds by offering an attractive yield along with various other characteristics (asset size, quality, marketability, and administrative simplicity) that have elicited at least some funds from investors who have traditionally shied away from mortgage investments.

The available data on the ownership of GNMA passthroughs are summarized in table 9. Unfortunately, almost one-half of the ownership is in the "nominees and others" category, which does not help much in identifying owners. GNMA, however, estimates that about one-third of this category represents holdings by pension and retirement funds. If this is correct, then holdings by these two types of institutions alone rose from 7.7 percent of total holdings in 1971 to about 25.2 percent, or $30½ billion, by mid-1981.

In addition to increasing the flow of funds to mortgage originators, there

Table 7.—Securities Backed by Mortgage Pools

Type	GNMA passthrough	FHLMC participation certificate.	FHLMC guaranteed mortgage certificate.	Privately insured passthrough	Tax-exempt mortgage revenue bond.
Issued by	Private mortgage originators (more than 800 in 1981).	FHLMC	FHLMC	Private mortgage originators	State and local government agencies.
Insured by	GNMA, with "full faith and credit" of U.S. Government.	FHLMC	FHLMC	Private mortgage insurers	Not insured.
First issue	1970	1971	1975	1977	1978.
Amount outstanding July 1981	$101.6 billion	[1] $21.6 billion	[1] $2.9 billion	$12.6 billion	[2] $37.0 billion.
Type of mortgage in pool	FHA/VA	Conventional	Conventional	FHA/VA and conventional	FHA/VA and conventional.
Cash flow	Monthly passthrough of principal and interest, whether collected by mortgage servicer or not.	Same as GNMA passthrough	Semi-annual interest payments; annual principal payments.	Same as GNMA passthrough	Same as other tax-exempt revenue bonds.
Comments	Active secondary market; traded in futures market since 1975.		Designed to appeal to investors who prefer bond-type instruments; none sold since December 1979.		

1. Total sales through July 1981; outstanding amount of participation certificates and guaranteed mortgage certificates combined was $17.7 billion in July.
2. Estimate.

NOTE.—GNMA: Government National Mortgage Association; FHLMC: Federal Home Loan Mortgage Corporation; FHA: Federal Housing Administration; VA: Veterans Administration.

Table 8.—Turning Points in Treasury Bond Yields and Mortgage Commitment Rates

Turning point	Treasury bond yields[1]				Mortgage commitment rates[2]					Col. (9) ÷ Col. (4)	Col. (10) ÷ Col. (5)
	Date	Level	Change from previous turn		Date	Lag	Level	Change from previous turn			
			Basis points	Percent[3]				Basis points	Percent[3]		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Trough	12/49	2.19			2/51	14	4.31				
Peak	6/53	3.13	94	35.3	1/54	7	4.37	56	12.2	.60	.35
Trough	7/54	2.47	−66	−23.6	11/54	4	4.66	−19	−4.0	.29	.17
Peak	10/57	3.73	126	40.6	2/58	4	5.69	101	19.5	.80	.48
Trough	4/58	3.12	−61	−17.8	10/58	6	5.38	−31	−5.6	.51	.31
Peak	1/60	4.37	125	33.4	7/60	6	6.10	72	12.5	.58	.37
Trough	5/61	3.73	−64	−15.9	9/65	51	5.47	−63	−10.9	.98	.69
Peak	6/70	6.99	326	60.8	3/70	−3	8.97	350	48.5	1.09	.80
Trough	10/71	5.46	−153	−24.5	5/72	7	7.33	−164	−20.1	1.07	.82
Peak	8/74	7.39	197	29.2	10/74	2	9.84	231	27.2	1.24	.98
Trough	12/76	6.38	−96	−13.9	3/77	3	8.68	−98	−10.5	2.01	.75
Peak	3/80	11.87	549	60.2	4/80	1	16.16	748	60.2	1.36	1.00
Trough	6/80	9.40	−247	−28.2	8/80	2	12.19	−397	−28.0	1.61	1.21

1. Monthly average of daily yields on fully taxable U.S. Treasury bonds neither due nor callable for a specified number of years. Prior to April 1952 the "specified number" was 15; from April 1952 through March 1953, it was 12; and since April 1953 it has been 10.
2. A spliced series. January 1949 through December 1968: conventional mortgage yields on one- to four-family properties authorized by life insurance companies; January 1964 through July 1972: the contract interest rate on conventional first mortgage loans originated by life insurance companies for the purchase of new single-family homes; January 1973 to present: the average contract interest rate on commitments by all lenders for newly built single-family homes (with a 75-percent loan-to-price ratio and a 25-year term of maturity). Data for August 1972 through December 1972 were interpolated.
3. Calculated "symmetrically," i.e., the percent change from level X to level Y equals
$$\frac{Y-X}{(X+Y)/2}\times 100.$$

Sources: U.S. Department of the Treasury, Federal Home Loan Bank Board, and Jack M. Guttentag and Morris Beck, *New Series on Home Mortgage Yields Since 1951*, (New York: National Bureau of Economic Research, 1976).

Table 9.—GNMA Passthrough Certificates Outstanding, by Type of Holder, 1971–81

End of year	Total amount outstanding (billions of dollars)	All holders	Type of holder (percent)							
			Depository institutions			Credit unions	Pension and retirement funds	Mortgage companies and investment banks	Individuals	Nominees and others
			Commercial banks	Thrifts						
				Savings and loan associations	Mutual savings banks					
1971	3.1	100	4.0	69.2	19.2	5.7	5.1	1.5	1.9	7.7
1972	5.6	100	5.2	41.7	30.2	6.1	5.0	9.4	1.3	10.4
1973	7.9	100	5.7	33.8	21.6	5.1	7.1	10.1	1.9	15.3
1974	11.9	100	5.9	30.4	18.9	4.0	7.7	10.6	1.6	21.7
1975	16.3	100	4.8	27.3	14.7	3.2	7.9	18.9	1.2	22.0
1976	30.6	100	5.2	19.6	13.0	2.6	10.0	20.3	1.1	28.1
1977	44.9	100	6.0	14.7	11.7	2.6	11.4	17.9	1.2	35.0
1978	54.3	100	5.9	13.7	11.0	2.4	11.6	13.1	1.4	41.1
1979	76.4	100	5.9	15.9	9.8	2.1	9.8	6.6	1.6	48.9
1980	93.9	100	5.3	17.2	9.7	2.0	9.2	6.8	1.8	48.0
1981 [1]	101.6	100	5.2	18.2	9.4	1.8	9.0	6.2	1.8	48.4

1. July.

Source: Government National Mortgage Association and Federal Reserve Board.

is another way in which passthroughs may have aided mortgage markets. Recall that most passthroughs are backed by FHA and VA mortgages. The FHA/VA sector of the mortgage market has generally been more stable than the conventional sector because the FHA/VA sector was not subject to State-imposed usury ceilings. By strengthening the relatively more stable sector, passthroughs may have increased the stability of the overall mortgage market.

Another way in which passthroughs may have contributed to more stable mortgage markets stems from the existence of an efficient secondary market for GNMA passthroughs. This secondary market permits originators to sell passthroughs out of portfolio during periods of slow deposit inflow. Several factors, however, suggest that this process may have been relatively unimportant. First, some funds used to purchase passthroughs would have found their way to mortgage markets anyway. Second, because periods of slow deposit inflow tend to be periods of high market interest rates, mortgage originators would have to record a capital loss if the passthroughs were sold from portfolio at those times; this they have been loath to do.[8] Third, to the extent that sales of passthroughs out of portfolio resulted in a net increase in loanable mortgage funds, mortgage interest rates would have tended to fall, inducing diversified investors to switch out of mortgages and into other assets.[9]

Mortgage revenue bonds.—Tax-exempt mortgage revenue bonds (MRB's) are debt instruments issued by State housing finance agencies and by local governments to finance the origination of mortgages. A common approach is for a State or local government agency to lend the proceeds of the bond sale to financial institutions, who then relend them to homebuyers.[10] Because the proceeds were originally raised in the tax-exempt market, the mortgages can be written at a lower rate than otherwise—perhaps 1 to 4 percentage points below the unsubsidized mortgage rate.

MRB's became an important source of housing finance in the late 1970's. Sales of these bonds amounted to $14.3 billion in 1980, compared with only $0.6 billion 5 years earlier. The Congressional Budget Office estimated that, in the absence of legislative restraints, MRB sales could have reached $20–$35 billion by 1984; Patric Hendershott estimated an eventual upper bound of $440 billion, replacing one-half of regular home financing.[11]

Concern about the Federal revenue loss caused by MRB's led to the enactment, late in 1980, of the Mortgage Bond Subsidy Act. The act limits the amount of single-family MRB's that may be issued in each State during 1981–83, and removes the tax exemption in later years. For each State, the limit is the larger of $200 million or 9 percent of the average level of mortgage originations in the State during the preceding 3 years. In general, each State's limit is allocated equally to State and to local housing agencies.

Sales of MRB's virtually ceased with the enactment of this legislation because ambiguities in the act dissuaded potential issuers from going to market. MRB sales surged late in 1981, however, after Treasury Department regulations—issued in July and November to implement the new law—resolved many of the ambiguities.

In addition to limiting the volume of MRB sales, the act places restrictions on the price that may be paid for houses financed by MRB proceeds; in general, the price cannot exceed 90 percent of the average price of single-family houses in the city or county. Before this legislation was enacted, many MRB's specified income-eligibility limits for borrowers, but these had

8. Edward J. Kane, *Reregulation, Savings and Loan Diversification and the Flow of Housing Finance*, Working Paper No. 640, (Cambridge, Mass: National Bureau of Economic Research, March 1981) p.13, points out that "[in] every year since 1966, S&L's unrealized mortgage losses were sufficient in the aggregate to wipe out their federal income-tax liability." S&L's did not "book" the losses, however, and did make positive tax payments each year. Kane argues that S&L's did not "book" the losses because, if they had, the associations would have fallen short of the capital-adequacy requirements set by the Federal Saving and Loan Insurance Corporation (FSLIC) to determine eligibility for FSLIC insurance.

9. See Seiders, "GNMA-Guaranteed Passthrough Security," on which this and the preceding paragraph have been based.

10. MRB's are described and analyzed by John A. Tuccillo and John C. Weicher, *Local Mortgage Revenue Bonds* (Washington, D.C.: The Urban Institute, May 1979), and Peggy Brockschmidt, "Tax-Exempt Single-Family Bonds," *Federal Reserve Bank of Kansas City Economic Review* 65 (May 1980): 3–12.

11. U.S. Congress, Congressional Budget Office, *Tax-Exempt Bonds for Single-Family Housing* (Washington, D.C.: U.S. Government Printing Office, April 1979) p. 40, and Patric H. Hendershott, *Mortgage Revenue Bonds: Tax-Exemption with a Vengeance*," Working Paper No. 447 (Cambridge, Mass: National Bureau of Economic Research, February 1980) p. 24.

Table 10.—Variable-Ceiling Certificates of Deposit

Type	Maturity	Authorization effective	Reference rate	Formula for ceiling rates			Amounts outstanding, December 1981 (billions of dollars)		
				When the reference rate is:	The ceiling rate is: For commercial banks	The ceiling rate is: For savings and loans and mutual savings banks	Commercial banks	Savings and loans	Mutual savings banks
6-month money market (MMC)	26 weeks	June 1, 1978	Discount rate on 6-month U.S. Treasury bills	8.75% and above 8.50% to 8.75% 7.50% to 8.50% 7.25% to 7.50% below 7.25%	ref. rate+¼% ref. rate+¼% ref. rate + ¼% 7.75% 7.75%	ref. rate+¼% 9.0% ref. rate+¼% ref. rate+¼% 7.75%	216.2	182.8	53.7
2½-year small saver (SSC)	2½ to 4 years	January 1, 1980	Yield on 2½-year U.S. Treasury securities	12.00% and above 9.50% to 12.00% below 9.50%	11.75% ref. rate−¼% 9.25%	12.00% ref. rate 9.50%	57.1	97.7	21.8
All saver (ASC)	1 year	October 1, 1981	Yield on 52-week U.S. Treasury bills		70% of ref. rate	70% of ref. rate	18.6	19.8	5.1

Source: Federal Reserve Board, Federal Home Loan Bank Board, and National Association of Mutual Savings Banks.

generally been quite high. Of the 50 local jurisdictions that had sold MRB's by early 1979, 9 specified no income limits at all on the income of the borrowers. Of the remaining 41 jurisdictions, one-half specified income limits that were more than double the median income of the locality. In only seven jurisdictions were the income limits set so that families with more than 150 percent of median income would be ineligible.

Deregulation

In June 1978, the Federal regulatory agencies authorized depository institutions to issue small-denomination certificates of deposit carrying market-determined interest rates, and on March 31, 1980, the Depository Institutions Deregulation and Monetary Control Act of 1980 was signed into law. These actions were two of the most important steps in years toward freeing up the housing finance system.[12]

Variable-ceiling certificates.—The formulas used to determine the ceiling interest rate that can be paid on the three kinds of small-denomination certificates of deposit, as well as some of their other characteristics, are shown in table 10. The amount of these variable-ceiling certificates outstanding has risen rapidly. In January 1979, they accounted for 11 percent of all savings and small time deposits at depository institutions; by January 1982, they accounted for over 50 percent. Variable-ceiling certificates have enabled depository institutions to compete for funds despite high market interest rates that have characterized recent years. Previously, all savings and small time deposits had been subject to the fixed (usually low) rate ceilings of regulation Q. (Technically, regulation Q applies only to commercial banks. As in common practice, the term will be used to encompass the deposit rate ceilings to which thrifts have been subject since 1966.) When market rates rose above regulation Q ceilings, depositors tended to shift funds out of thrift institutions and into higher yielding market instruments. Slow or negative inflows of funds, in turn, led to reduced mortgage lending activity by thrifts.

Econometric models have been used to estimate the amount that deposits at thrift institutions would have fallen as a result of rising market rates if thrifts had not been authorized to offer variable-ceiling certificates. One such estimate concluded that about two-thirds of the $110 billion invested in 6-month money market certificates (MMC's) at thrift institutions during 1978:III–1979:II were transferred out of other thrift accounts; and the remaining one-third ($38 billion) represented new money—money that would not have been deposited at thrifts if MMC's had not existed. Looked at from another angle, this finding implies that if MMC's had not existed, deposit flows to thrift institutions would have dried up in 1978:III–1979:II, averaging only $3.9 billion per quarter (compared with $13.2 billion per quarter in 1977:III–1978:II). By preventing this decline, and thereby augmenting the supply of mortgage funds, MMC's may have induced about 300,000 housing starts during these four quarters.[13]

As just noted, a large fraction of the funds deposited in MMC's were transferred out of other accounts at thrifts. For at least three reasons, thrifts were not indifferent to this shift in the composition of their liabilities. First, and most obviously, MMC's are more costly than other small accounts. Thrifts' earnings, therefore, suffered. Second, because rates on MMC's are tied to a market rate, thrifts became more vulnerable to interest rate increases. In December 1977, 6 months before MMC's were authorized, only 7½ percent of thrifts' liabilities were either tied to market rates or unregulated. By late 1981, 65 percent of thrifts' liabilities were in this category.

Third, the switch to MMC's caused a reduction in the average maturity of thrifts' liabilities. During most of the 1970's, the trend at S&L's had been toward lengthening the maturity of liabilities, thus bringing asset and

12. Regulatory changes that permit thrifts to offer new types of mortgage instruments are covered in the following section.

13. Dwight M. Jaffee and Kenneth T. Rosen, "Mortgage Credit Availability and Residential Construction," *Brookings Papers on Economic Activity*, No. 2 (1979):366. For alternative estimates, comparable in magnitude, see Allan Sinai, et al., "Mortgage Finance and the Housing Outlook," *The Data Resources Review of the U.S. Economy* 3 (February 1979):1.9–1.22. Patric H. Hendershott, however, argues that MMC's provided much less support to housing. See his "Real User Costs and the Demand for Single-Family Housing," *Brookings Papers on Economic Activity*, No. 2 (1980), especially pages 411 and 423 and Jaffee's reply (page 449).

Table 11.—Deposit Balances at Insured Savings and Loan Associations, by Type of Account, 1970–81

Type of account	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
	Billions of dollars											
Regular	82.3	90.0	98.7	103.5	102.8	116.8	129.9	142.5	142.1	126.3	116.9	98.4
Jumbo certificates[1]	.4	1.1	1.8	2.6	3.7	5.3	6.5	8.5	13.6	25.1	26.6	46.2
6-month money market certificates	0	0	0	0	0	0	0	0	18.3	101.9	159.6	202.5
Small savers certificates	0	0	0	0	0	0	0	0	0	0	41.1	77.4
Other certificates	53.9	70.7	91.8	105.7	120.7	142.4	173.1	210.6	228.3	197.0	129.4	80.6
Deposits not elsewhere classified	(2)	(2)	(2)	4.1	4.5	5.7	6.7	7.7	7.0	4.9	2.7	(2)
Total	136.9	161.8	192.3	215.9	231.7	270.2	316.2	369.3	411.7	455.9	497.3	505.2
	Percent of total											
Regular	59.8	55.6	51.3	47.9	44.4	43.2	41.1	38.6	34.5	27.9	24.0	19.6
Jumbo certificates[1]	.3	.7	.9	1.2	1.6	2.0	2.1	2.3	3.3	5.1	7.5	9.1
6-month money market certificates	0	0	0	0	0	0	0	0	4.7	22.5	32.7	40.1
Small savers certificates	0	0	0	0	0	0	0	0	0	0	8.4	15.3
Other certificates	39.2	43.7	47.7	49.0	52.1	52.7	54.7	51.0	55.8	43.5	26.6	16.0
Deposits not elsewhere classified	(2)	(2)	(2)	1.9	1.9	2.1	2.1	2.1	1.7	1.1	.5	(2)
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

1. Certificates in the amount of $100,000 or more.
2. Included in "Other certificates."
NOTE.—Data are for September of each year; figures for 1970–72 are estimates.
Source: 1972–80: Federal Home Loan Bank Board.

liability maturities into better balance and reducing the exposure of S&L's to interest rate risk.[14] Certificate accounts with maturities of 2 and 4 years were introduced in the early 1970's and an initial surge in these accounts took certificate accounts to about one-half of S&L deposits by late 1978 (table 11). The shift toward certificate accounts continued, albeit at a slower pace, during the middle of the decade; by late 1977, 57 percent of S&L deposits were in certificate accounts with relatively long maturities ("other certificates" in table 11). The introduction of the 6-month MMC in 1978 caused an immediate reversal of this trend; by September 1981, long certificates were down to 16 percent of total deposits.

At about the same time that the average maturity of liabilities at S&L's started to fall, the average "maturity" of their mortgage asset portfolios started to rise, worsening the maturity imbalance.[15] By mid-1981—when the percentage of liabilities accounted for by long-term certificates was about one-half of its 1978 level—the maturity of mortgage assets was more than double its 1978 level.

The Depository Institutions Act.—The changes mandated by the Depository Institutions Deregulation and Monetary Control Act of 1980 were designed to shape the development of thrifts (and commercial banks) for years to come. Five provisions of the act could have important consequences for mortgage lenders:

- —all depository institutions are authorized to offer interest-earning checking accounts (NOW accounts);
- —interest rate ceilings on deposits are to be gradually eliminated;
- —the investment powers of thrift institutions are to be expanded significantly;
- —State usury ceilings on residential first mortgage loans are eliminated;
- —all depository institutions that are subject to reserve requirements will have access to the Federal Reserve's discount window.

Other parts of the act increase the level of federally insured deposits from $40,000 to $100,000; require reserves to be held by all depository institutions offering transaction accounts or nonpersonal time deposits; permit the Federal Reserve Board to impose supplemental reserve requirements in "extraordinary circumstances"; require the Federal Reserve to establish a schedule of fees for its services; and simplify "Truth in Lending" disclosures.

The last two of the major provisions can be dealt with briefly. S&L's and mutual savings banks that experience exceptional difficulties may benefit from access to the discount window, although these institutions are required to avail themselves of normal borrowing channels before turning to the Federal Reserve for credit; for thrifts, this means that the Federal home loan banks will continue to supply the overwhelming portion of their emergency credit needs. The elimination of usury ceilings—which becomes permanent if States do not reimpose ceilings before April 1, 1983—should enable borrowers to obtain mortgage loans during periods of very high interest rates and may result in a more evenly distributed regional impact of high interest rates.[16] (Although State ceilings were eliminated, Federal ceilings on FHA and VA mortgages persist; Congress has authorized a demonstration program, however, under which FHA mortgages may be written at market rates.)

The NOW accounts provisions of the act became effective January 1, 1981. If NOW accounts enable thrifts to attract funds away from commercial banks, mortgage markets could benefit in two ways. First, because thrifts devote a larger portion of their funds to mortgage lending than commercial banks do, the volume of mortgage lending would be expected to

14. See Dwight M. Jaffee and Kenneth T. Rosen, "The Changing Liability Structure of Savings and Loan Associations," *Journal of American Real Estate and Urban Economics Association* 3 (Spring 1980):33–49, and Walt Woerheide, "The Reduction of Interest Rate Risk Susceptibility at S&L's: How It Can Be and Has Been Done," *Federal Home Loan Bank Board Journal* 13 (September 1980):16–19.

15. The "maturity" of mortgage assets held by S&L's was calculated by dividing the amount of mortgage assets held at the beginning of a year by the amount of mortgage repayments during the year.

16. To keep open the option of imposing lower ceilings in the future, some States have passed new usury laws with very high ceilings.

rise. Second, because funds in NOW accounts will probably be less interest-sensitive than savings and time deposits, mortgage lending may become more stable cyclically.

The gradual elimination of deposit rate ceilings, over a 6-year period, should smooth the inflow of deposits during periods of high market interest rates by eliminating the competitive disadvantage that depository institutions have faced vis-a-vis direct investments. (It will also, of course, do away with the competitive advantage that thrifts have had vis-a-vis commercial banks by virtue of the one-quarter point thrift differential in regulation Q ceilings.) The cost of funds to thrifts *is* likely to rise substantially, although perhaps not as much as might at first be thought. When interest rates are high, thrifts supplement slow deposit flows (and slow mortgage repayments) with advances—although they are expensive—from the Federal home loan banks. Elimination of regulation Q should reduce the need for thrifts to resort to advances in these periods. Moreover, regulation Q has limited only explicit interest payments. Considerable evidence suggests that depository institutions have circumvented these limits (imperfectly, to be sure) by providing a variety of nonpecuniary returns to depositors. As just one example, the number of branch offices per insured S&L has risen from less than 1 in 1966, when thrifts were first subjected to regulation Q, to 4 in 1979, and increase of 14 percent per year.[17] With the elimination of regulation Q, depository institutions will be able to avoid much of the expense of implicit interest payments such as these.

Expanded investment powers will permit thrifts to make more nonmortgage loans than they now do, and will permit a reduction in the maturity of thrifts' assets, bringing the maturity of the left side of the balance sheet closer to that of the right. The new asset powers include permission for federally chartered S&L's to do the following:

—invest up to 20 percent of their assets in consumer loans, commercial paper, and corporate debt securities;
—invest in shares or certificates of open-end investment companies (mutual funds) that are registered with the Securities and Exchange Commission and that restrict their portfolios to the same investment instruments that S&L's are allowed to hold directly;
—invest up to 5 percent of their assets in loans for education and community development and in unsecured construction loans;
—issue credit cards and extend credit in connection with credit cards;
—provide trust and fiduciary powers under restrictions similar to those applicable to national banks.

For federally chartered mutual savings banks, new powers include permission to do the following:

—invest up to 5 percent of total assets in commercial, corporate, and business loans within the home State of the bank or within 75 miles of the bank's home office;
—accept demand deposits in connection with commercial, corporate, and business loan relationships.

In conjunction with NOW accounts, these new asset powers open up the possibility of S&L's becoming "family financial centers" that offer much the same range of services and convenience to households that "one-stop" commercial banking has offered for years. S&L's will be able to meet a family's needs for consumer and education loans, credit cards, trust services, and checking and savings accounts. All of these new asset powers also provide thrifts with a means to reduce the maturity of their asset portfolios, as does the authorization to invest in commercial paper, corporate debt securities, and mutual funds. Finally, diversification of its portfolio will enable an S&L to earn a given level of return at lower risk or, conversely, to earn a higher level of income at a given risk.

The extent to which thrifts will avail themselves of their new powers remains to be seen, however. To take full advantage of the "bad debt allowance" afforded thrifts by Section 593 of the Internal Revenue Code—an allowance that reduces the maximum marginal tax rate for thrifts from 46 percent to 27.6 percent—at least 82 percent of an S&L's total assets (72 percent for a mutual savings bank) must be held as "qualifying assets." Basically, these assets are mortgages, Treasury debt, and cash. For most thrifts, the qualifying component of assets far exceeds the statutory minimum, and tax considerations will not be a constraint on whether or not to exercise their new asset powers. Nevertheless, some thrifts are close to, or at, the minimum. For these thrifts, which are presumably among the more innovative and aggressive in their industry, Section 593 constitutes a powerful disincentive to further diversification. For example, for an S&L to reduce its qualifying assets below the minimum without reducing its after-tax income, the net pretax yield on nonqualifying assets would have to be more than 50 percent higher than on qualifying assets.[18]

Perhaps of greater relevance, State-chartered thrifts that have had some of these investment alternatives open to them have made very little use of them. Virtually all of the 17 States in which mutual savings banks operate, for instance, allow at least some types of consumer lending. Yet consumer loans made up only 1.5 percent of total assets of mutual savings banks at yearend 1979 (and only 2.3 percent of total assets in New England, where savings banks have traditionally been granted rather broad consumer lending powers.)

Several factors contribute to the apparent lack of enthusiasm for consumer lending on the part of thrifts.[19] First, commercial banks

17. The number of branch offices would have increased from 1966 to 1980 even if thrifts had not been subject to regulation Q. A number of studies, however, have identified regulation Q as the major factor in increased branching. See, for example, Kristine L. Chase, "Interest Rate Deregulation, Branching, and Competition in the Savings and Loan Industry," *Federal Home Loan Bank Board Journal* 14 (November 1981):2–6.

18. U.S. Congress, House of Representatives, Committee on Banking, Finance, and Urban Affairs, *The Report of the Interagency Task Force on Thrift Institutions*, Committee Print 96–14, 96th Congress, 2nd session, 1980, p. 111.

19. See *Report of the Interagency Task Force*, pages 58–59.

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have a competitive advantage by virtue of their long experience in the field. Second, consumer lending is quite expensive, with net returns lower than is commonly thought. The net yield (after operating expenses and losses) on installment credit loans held by medium-sized commercial banks averaged only 0.17 percentage points more than the net yield on mortgages during 1974–78. Moreover, rates on consumer loans respond only very sluggishly to changes in the general level of interest rates; thus, although these loans are short-term assets, they do not possess the principal attraction of other short-term instruments.[20] On the other hand, the low levels of consumer lending by mutual savings banks may reflect consumer preference. Consumers may prefer to borrow from the institutions that handle their other financial affairs; restrictions on thrifts that prevented them from offering "full service banking" may have encouraged consumers to look to other institutions to satisfy their credit needs.

Maris estimates that consumer loans at S&L's will rise from about 1 percent of assets in 1979 to about 9½ percent by the end of 1985.[21] As he points out, increased consumer lending need not be entirely at the expense of mortgage lending. Consumer lending may attract additional deposits and thus generate larger total assets. Thus, although he expects mortgage loans to form a smaller percentage of total assets, the dollar value of mortgages need not fall.

Thrifts dissuaded from entering the consumer loan market directly—either because of lack of demand or because of the start-up costs involved—may decide to participate in the market indirectly. Such participation might be arranged by purchasing consumer receivables from institutions that originate and service consumer loans and by purchasing liabilities (commercial paper and debt issues) from these institutions. Indirect participation would allow thrifts to diversify their portfolios with liquid assets, while avoiding the high cost that would be involved in developing their own origination and servicing departments. Furthermore, liabilities of consumer-loan originators would probably be safer, from the point of view of default risk, than direct consumer loans.

In the long run, the authorization to hold up to one-fifth of their total assets as corporate debt securities and commercial paper may be of more significance for federally chartered S&L's than their new consumer lending powers. It is reasonable to expect the behavior of S&L's to be similar to that shown by commercial banks and mutual savings banks for many years. When selecting assets for their portfolios, S&L's will pay close attention to the yields on mortgages, bonds, and commercial paper. Also, mutual funds may enable even small S&L's to use their new investment powers without having to establish their own bond and commercial paper departments.

It is unclear how quickly S&L's will take advantage of their expanded authority to invest in commercial paper. The entrance of S&L's into the bond markets, however, will probably be slow unless bond yields rise dramatically relative to mortgage yields. As shown by the behavior of diversified investors, the yield spread between mortgages and bonds strongly favored mortgage investment during 1976–80. Mutual savings banks' holdings of home mortgage rose 81 percent during this period, somewhat faster than their holdings of corporate bonds (21 percent). Commercial banks' holdings of home mortgages doubled while their holdings of corporate bonds declined.[22]

The ultimate effect of the provisions of the Depository Institutions Act cannot be predicted with any confidence. While some of the reforms (removal of interest rate ceilings and authorization of NOW accounts, for example) will probably tend to increase the volume and stability of funds flowing to mortgage lenders, others (such as expanded asset powers) may cut into funds that thrifts would otherwise use for mortgage originations.[23]

Two consequences of the act do seem clear, however. First, competition among financial institutions will become much more intense. Thrifts will compete for loans with commercial banks, mortgage bankers, and finance companies and will compete for deposits with commercial banks and money market mutual funds. New types of institutions—institutions that cross traditional industry lines—will be developed, further intensifying competition. Congress is now considering legislation that would enable thrifts to compete even more effectively by granting them many of the powers now enjoyed by commercial banks. Even if such legislation is enacted, however, some—perhaps many—thrifts will find themselves unable to compete effectively in the changed environment and will close their doors or merge with stronger firms.

Second, the thirfts that do survive will not change into full-service commercial banks overnight or move *en masse* out of the mortgage markets or suddenly metamorphose into mortgage bankers. Local conditions—mortgage and consumer loan demand, competition from other financial institutions, deposit flows, managerial daring, etc.—will, in large part, determine which path a particular institution takes. Whichever path is chosen, however, the institution will find itself in need of new or retrained staff able to operate in unfamiliar markets. It will also be forced to compete against institutions that have more experience and expertise in those markets. These factors, along with simple inertia—which is an especially

20. The net yields on consumer loans and mortgages outstanding at commercial banks "have moved up and down in almost complete tandem in recent years." (Brian Maris, "Consumer Lending by S&L's: The Prospects," *Federal Home Loan Bank Board Journal* 13 (May 1980): 21.)

21. Maris, "Consumer Lending" p. 25.

22. A formal analysis of S&L's authorization to invest in corporate bonds—concluding that associations are unlikely to make much immediate use of the authority—is provided by Patric H. Hendershott and Kevin E. Villani, *Savings and Loan Usage of the Authority to Invest in Corporate Debt*, Working Paper No. 725 (Cambridge, Mass.: National Bureau of Economic Research, July 1981).

23. Analyses of proposals similar to the provisions of the Depository Institutions Act generally found that the net effect on mortgage lending would be minor. See, for example, Ray C. Fair and Dwight M. Jaffee, "The Implications of the Proposals of the Hunt Commission for the Mortgage and Housing Markets: An Empirical Study," and Paul S. Anderson and Robert W. Eisenmenger, "An Empirical Study of the Hunt Commission Report Proposals for the Mortgage and Housing Markets," both in *Policies for a More Competitive Financial System*, Conference Series No. 8 (Boston: Federal Reserve Bank of Boston, June 1972). Addressing the Depository Institutions Act itself, Kane ("Reregulation," pp. 1–2) concludes that the act's effects "on S&L participation in mortgage markets should prove relatively mild."

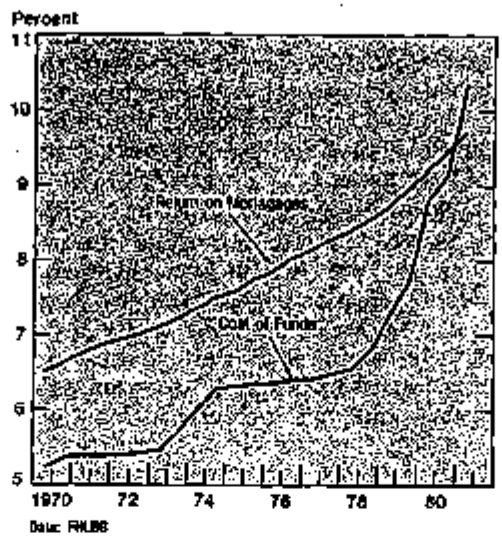
powerful force for thrift institutions that have cultivated a particular sense of their role in the local community—combine to guarantee that the pace of change will be moderate.

Recent legislative and regulatory developments.—During the first half of 1981, the average cost of funds to S&L's rose above the average return on their mortgage assets (chart 2). As a result, more than two-thirds of insured S&L's incurred losses, totaling $1.5 billion. This was the first loss for a 6-month period in at least 40 years. By mid-1981, 10 percent of insured S&L's were on the Federal Home Loan Bank Board's "problem list", as compared with only 3 percent at the end of 1980. (In general, S&L's on the problem list face a significant probability of requiring Federal intervention to stave off insolvency.) Several legislative and regulatory actions taken in mid-1981 were addressed to the plight of the thrifts.

The Economic Recovery Tax Act of 1981 authorized depository institutions to offer a small denomination tax-exempt certificate of deposit—the All Savers Certificate—beginning October 1981. Yields on the 1-year certificates are to be set at 70 percent of the yield on 1-year Treasury bills, and 75 percent of the funds raised with the certificates—or 75 percent of net savings gains—is to be earmarked for housing loans. The certificates will probably prove popular with individuals in the higher tax brackets and should have a noticeable effect on the cost of funds at thrift institutions. Furthermore, some individuals who, because they are in lower tax brackets, would not benefit from the tax-exempt status of All Savers Certificates may find the certificates attractive nonetheless. The low minimum denomination in which the certificates are being offered by most institutions, combined with a federally insured yield more than double the passbook rate may induce these individuals to shift funds from passbook accounts into All Savers Certificates. Although thrifts' earnings may benefit from the All Savers Certificate, it is less likely that they will channel much of the proceeds from sales of the certificates into housing. Thrifts are more likely to channel the proceeds into short-term instruments. The 1-year securities that FNMA has decided to offer, which will be counted as mortgage securities for purposes of assessing compliance with the provisions of the act, are prime possibilities.

CHART 2

Average Return on Mortgages and Average Cost of Funds, Insured Saving and Loan Associations, 1970-81



The act also liberalized the regulations governing Individual Retirement Accounts (IRA's) by increasing the number of people eligible to use IRA's and by raising annual contribution limits. Thrifts, which held more than one-half of all outstanding IRA's at yearend 1979, will be major beneficiaries of the change if, as is to be expected, the liberalization leads to larger and more stable funds flows.[24]

Two steps taken in August 1981 address the problem that old, low-yielding mortgages constitute for thrifts. This problem is illustrated by the situation in September 1980. About 75 percent of the mortgages in S&L portfolios carried yields of less than 10.5 percent, although S&L's were paying about 10.8 percent on new MMC's (table 12).

First, the Federal Home Loan Bank Board proposed a regulatory change that would permit thrift institutions that sell low-yield mortgages to spread the resulting loss over several years, contrary to conventional accounting practice, which requires that the entire loss be recorded at the time it is incurred. FNMA announced that it would offer to buy unlimited quantities of old mortgages at market prices if the accounting change becomes effective.

Also in August, FNMA announced that it would swap passthrough certificates for old mortgages. A regulatory interpretation by the Bank Board holds that many S&L's will be able to make such swaps without recording the losses on their books even though the face value of the certificates would be considerably less than the outstanding balance on the mortgages.

Table 12.—Mortgage Loans Held by Savings and Loan Associations: Percent Distribution by Rate, as of September 1980

Rate	Percent distribution	
	Class	Cumulative
Under 5.50 percent	0.44	0.44
5.50 to 5.99	.81	1.25
6.00 to 6.49	1.75	3.00
6.50 to 6.99	1.62	4.62
7.00 to 7.49	4.04	8.66
7.50 to 7.99	5.47	14.13
8.00 to 8.49	5.44	19.57
8.50 to 8.99	17.44	37.01
9.00 to 9.49	15.47	52.48
9.50 to 9.99	14.19	66.67
10.00 to 10.49	7.80	74.47
10.50 to 10.99	6.49	80.96
11.00 to 11.49	4.52	85.48
11.50 to 11.99	4.79	90.27
12.00 to 12.49	2.94	93.21
12.50 and over	6.70	99.91

Source: U.S. League of Savings Associations.

Alternative mortgage instruments

High and volatile interest rates and sharply higher house prices have spurred participants in the mortgage market to turn to various techniques of "creative financing." This section first discusses several ad hoc devices that operate within the context of the standard fixed-payment mortgage (SFPM). It then describes the features of the SFPM that are responsible for much of the interest in developing alternatives to the SFPM, and finally it discusses four of these alternatives that have been and are being developed. These alternatives are summarized in table 13.

24. See John A. Tuccillo, "Mortgages, Savings, and Expanded IRA's," *Federal Home Loan Bank Board Journal* 14 (May 1981): 14-19.

One of the ad hoc devices that is used in financing purchases of newly built houses is the "buy down" mortgage. With a buy-down mortgage, a borrower typically makes payments during the first few years as if the interest rate were one to three percentage points lower than it actually is. The difference between scheduled payments and payments by the borrower is made up by the builder. When the buy-down period ends, the borrower is responsible for all scheduled payments. Borrowers, of course, hope that their incomes rise sufficiently during the buy-down period to enable them to shoulder the increased payments, or that interest rates will fall and they will be able to refinance their loans at the end of the buy-down period. An April 1981 survey of builders by the National Association of Home Builders found that about one-half of the survey respondents "buy down" mortgage interest rates for their purchasers.

For previously occupied houses, some form of "creative financing" is currently involved in about 75 percent of the sales. The most common form involves the assumption of the seller's outstanding, low-rate mortgage by the purchaser. Sellers are frequently willing to hold second trusts in order to enable the buyer to complete the purchase. Another device buyers can sometimes use to get below-market-rate financing is the "wraparound" mortgage, in which the old low-rate mortgage is assumed as part of a new, larger mortgage that carries an interest rate roughly equal to the weighted average of the rate on the old mortgage and the market rate on new loans.

When mortgage rates have been rising, of course, mortgage assumptions are not in the best interest of holders of mortgages. Holders, eager to get old loans off their books and to replace them with new loans, have tried to enforce the "due on sale" clauses that are included in most outstanding conventional mortgages. (FHA and VA mortgages do not contain such clauses.) Efforts to enforce these clauses have frequently wound up in court. About one-third of the States currently restrict the enforcement of the clauses.

The development of alternatives to the SFPM represents a more basic and longer term response to the high and volatile interest rates that have prevailed in recent years. Two features of the SFPM are responsible for much of the interest in developing alternative mortgage instruments.[25] First, the SFPM exposes lenders to considerable risk when interest rates are volatile. Second, in an inflationary environment, an SFPM results in high real mortgage payments during the early years of the mortgage; this presumably decreases the demand for mortgages.

The major interest rate risk facing mortgage lenders arises because of the imbalance in the maturity structures of assets and liabilities at thrift institutions.[26] Long-term mortgages

25. See Donald R. Lessard and Franco Modigliani, "Inflation and the Housing Market," in Modigliani and Lessard, eds., *New Mortgage Designs for Stable Housing in an Inflationary Environment*, Conference Series No. 14 (Boston: Federal Reserve Bank of Boston, January 1975), pp. 14-36.

26. Other types of interest rate risk—ones that confront mortgage companies as well as thrift institutions—are generated by the lag between the time a commitment is made and the time the mortgage is "closed" and by the lag between the time a loan is closed and the time it is sold to the ultimate investor. In the former case, if interest rates rise during the period, the lender will incur a capital loss when the mortgage is sold. (If interest rates fall, on the other hand, the borrower probably will not take down the commitment.) Many lenders have addressed this asymmetry by shortening the commitment period, by charging higher, nonrefundable, commitment fees, and by using floating rates tied to some market indicator. Little use has been made of the financial futures market to hedge this risk, although this alternative has been open to mortgage companies and federally chartered thrift institutions for years.

Table 13.—Summary of Alternative Mortgage Instruments

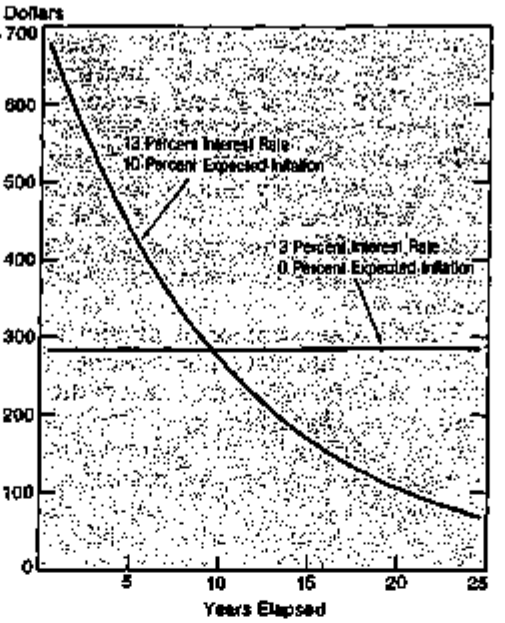
Instrument	Distinguishing feature	Status		Prevalence	Advantages compared with SFPM		Disadvantages compared with SFPM	
		Federally chartered thrifts	National banks		Borrowers	Lenders	Borrowers	Lenders
Variable rate mortgage (VRM)	Mortgage rate is linked to a reference rate and may change during life of loan.	Authorized nationwide in 1979; restrictions relaxed in 1981.	Authorized nationwide in 1981.	Variants popular in California, Ohio, and Wisconsin.	Slightly lower interest rate; increased availability of funds.	Interest rate risk is reduced.	Increased interest rate risk.	Lack of standardization makes it difficult for investors to evaluate loans.
Graduated payment mortgage (GPM)	Payments increase gradually in early years of loan and then level out.	Authorized nationwide in 1979.	Subject to State laws.	California, Florida, Texas, Colorado, and Arizona account for more than one-half of all FHA-insured GPM's.	Reduced payments in early years.		Payments may rise faster than income.	Negative amortization in early years.
Shared appreciation mortgage (SAM)	Lender shares in appreciation of the property.	Regulations proposed in 1980; not yet authorized.	Subject to State laws.	Incipient; long used in nonresidential mortgages.	Substantially lower interest rate.	Interest rate risk is reduced.	Reduction of capital gains on appreciation; need to pay large amount at end of loan period.	Uncertain return on investment; reduced cash flow in early years.
Price level adjusted mortgage (PLAM)	Payments are constant in real terms.	Discussion stage.	Discussion stage.		Eliminates tilt in real payments stream.	Interest rate risk is reduced; certainty about the real value of payments.	Inflation-induced increase in equity is eliminated.	Reduced cash flow in early years.

constitute a large portion of the assets of these institutions, while short-term deposits are the dominant liability. When interest rates rise, thrift institutions frequently must raise the rate they pay to their depositors; at the same time, the interest that the institutions earn on their portfolios of the outstanding mortgages remains constant, or rises much slower than deposit rates as old mortgages are paid off and new mortgages are added to the portfolio. Moreover, the risk that rising rates constitute for mortgage lenders is not offset by a comparable opportunity to profit from interest rate declines, because borrowers can frequently refinance their mortgages at relatively little cost when rates drop. Variable rate mortgage (VRM's) are designed to reduce the interest rate risk that fluctuating rates pose for lenders.

Price level adjusted mortgages (PLAM's)—and, to a lesser extent, graduated payment mortgages (GPM's)—address a different shortcoming of the SFPM, namely the "tilt" in a mortgage's real payment stream that is induced by inflation. If the mortgage interest rate would be, say, 3 percent when the price level is expected to remain constant, it would be about 13 percent when inflation is expected to average 10 percent per year. In each case, the "real" discounted present values of the two payment streams would be identical and—if a house buyer's income kept up with the general price level—the aggregate amount of "real" payments would constitute the same percentage of aggregate income over the life of the mortgage. The time-pattern of real payments would be substantially different, however. Consider a $60,000 mortgage with a 25-year term to maturity. At a 3-percent contract interest rate (corresponding to zero expected inflation), monthly payments would be $287. At a 13-percent interest rate (10 percent expected inflation), monthly payments would be $677. During the first year of the contract, when nominal payments and real payments are identical, real payments in the inflationary world are $390 higher each month than in the noninflationary world. Inflation would gradually erode the real value of the $677 payment, while the real value of the $287 payment would remain unchanged. These contrasting patterns are illustrated in chart 3.

CHART 3

Real Value of Monthly Payments on $60,000, 25-Year Mortgage



U.S. Department of Commerce, Bureau of Economic Analysis 6-7-1

If the demand for mortgages (and houses) depends in part on the time-pattern of real outlays, then inflation-induced higher real payments in the early years of the mortgage clearly depress demand.[27] The inflation-induced tilt in the real payments stream can be especially serious for young house buyers. Members of this group typically want a house that will serve a growing family. Also, they may reasonably expect real income to rise as they move up the life-cycle curve. Such house buyers may, therefore, prefer a mortgage loan with a rising real payment stream rather than the SFPM's declining stream.

Variable rate mortgage.—The distinguishing characteristic of VRM's is that the interest rate may be adjusted during the life of the contract in order to keep the rate in line with some reference rate—such as an index of the cost of funds to lenders or the average rate on new mortgages. VRM's are taken here in their generic sense to include renegotiable rate mortgages (RRM's), adjustable mortgage loans (AML's), and escalator mortgages. Variants on the general VRM principle are many and relate to the number, frequency, size, and cumulative amount of interest rate adjustments; borrower options to extend the maturity of the loan when the rate is increased (to keep monthly payments unchanged); and assumability of the loan.

VRM's clearly offer considerable protection to the lender by shifting part or all of the risk associated with long-term interest rate trends to the borrower. (Default risk, on the other hand, is probably somewhat higher for a VRM than for an SFPM.) They may also smooth the demand for mortgage funds by reducing the interest rate elasticity of demand. Borrowers will have less incentive to postpone their borrowing when rates are high, or to accelerate borrowing when rates are low, because subsequent adjustments will affect outstanding mortgages as well as new ones. The reduction in risk to lenders may increase the supply of mortgage funds by traditional lenders and may induce traditionally short-term lenders to enter the mortgage market. Another benefit to borrowers is that the initial interest rate on a VRM is usually a little lower than on an SFPM.

These benefits to borrowers must be weighed against the increased interest rate risk to which the VRM's expose them. For three reasons, borrowers are less well equipped to deal with this risk than lenders. First, rather small asset portfolios make it difficult for most borrowers to diversify away risk the way many lending institutions—with their large portfolios—do.[28] Second, most borrowers do not have the expertise that lending institutions have to gather and ana-

27. Although inflation tilts an SFPM's real payments stream, depressing housing demand, one should not conclude that the overall effect of inflation is to depress demand. A number of considerations suggest that the net effect of inflation is to increase demand. First, tax-deductibility of mortgage interest payments mitigates the tilt itself. Furthermore, with an SFPM the real value of equity in a house can be expected to rise more rapidly in an inflationary environment than in an environment of stable prices. Finally, the tax treatment of capital gains from house sales constitutes an incentive for sellers to plow capital gains back into the purchase of another house, rather than to use the gains to acquire other assets.

28. With their new investment powers, S&L's can diversify more efficiently than in the past. Previously, S&L diversification was mainly limited to diversification within the class of mortgages.

lyze information on recent and prospective financial developments and what they portend for interest rates. Third, lending institutions can hedge against interest rate risk in the financial futures market; the very large size of minimum transactions in this market preclude all but the very wealthiest mortgage borrowers from availing themselves of it.

VRM's might also work to the disadvantage of borrowers if the mortgages tend to be tied to short-term interest rates. In this case, rates would fluctuate over a wider range than rates on SFPM's. The "tilt" problem would thus be more serious when rates are high.

Borrowers, of course, benefit from ceilings on the size, frequency, and cumulative amount of rate adjustments. It should be noted, however, that it may not be the ceiling on the size of rate adjustments, but the current mortgage commitment rate, that effectively limits rate adjustments. If an adjustment would bring the VRM rate up close to or above the rate on new SFPM's, borrowers might pay off their loans and refinance with SFPM's. Realizing this possibility, lenders may forego the interest rate adjustment when the new rate would be close to the prevailing rate on new SFPM's.[29]

The refinancing option was undoubtedly an important consideration in the Federal Home Loan Bank Board's decision (in April 1981) to authorize federally chartered thrift institutions to offer VRM's unconstrained with regard to number, size, frequency, or cumulative amount of interest rate adjustments and to use almost any index—so long as it is outside the control of the lending institution and is readily verifiable by the borrower—as a reference rate. Previously, the Board had placed restrictions on all these elements.

Competition among lenders may result in some limits being placed on rate adjustments—at least initially, until borrowers become accustomed to VRM's—as will, perhaps, lenders' concern about default. On the other hand, such limits would make VRM's less attractive to secondary market purchasers.

VRM's may have special appeal to borrowers with a short expected tenure. Because VRM's typically carry an interest rate marginally lower then SFPM's, and because the borrower expects to move before the VRM rate will be raised (or before it will be raised very much), the borrower is indifferent to the interest rate risk of VRM's that would be of concern to borrowers with long expected tenure.

VRM's have not been attractive to secondary market purchasers. The great variety of terms and conditions that have characterized VRM's have made it difficult for purchasers to evaluate the investment potential of a particular VRM. The same factor militates against the pooling of VRM's. If this heterogeneity were overcome, VRM's could presumably be offered successfully in secondary markets. Policies adopted in mid-1981 by FNMA and FHLMC to govern their purchases of VRM's may go far toward establishing standard types of VRM's and enhancing their secondary market appeal. In fact, a few public offerings of VRM-passthrough securities were made successfully even before those policies were adopted.

VRM's have gained considerable popularity in some areas, and many observers think that they will be the dominant mortgage instrument before long. State-chartered thrift institutions in California and New England began sizable amounts of VRM lending in 1975. (Federally chartered institutions were not authorized to extend VRM's at that time.) VRM's accounted for more than two-thirds of all new mortgage loans written by large State-chartered S&L's in California during 1975 and 1976. This proportion has fallen rather steadily since that time, going as low as one-fifth in 1980. Several factors explain the decline. First, high and rising mortgage rates since since 1976 led some lenders to expect a reversal. In an attempt to "lock-in" prevailing rates, these lenders preferred to offer SFPM's with substantial prepayment penalties. Second, in January 1979, federally chartered S&L's in California were authorized to extend VRM's; this deprived the State-chartered institutions of the competitive advantage they had previously enjoyed. (VRM authority was extended to the rest of the Nation's federally chartered thrifts 6 months later.) By mid-1981, two-fifths of all thrift institutions were offering VRM's and it was expected that the share would rise to two-thirds by the beginning of 1982.

Graduated payment mortgages.—GPM's tailor the pattern of mortgage payments to the borrower's expected income pattern by providing for mortgage payments that rise gradually for a period of years; during each year, monthly payments are fixed, but, from one year to the next, payments increase. After the period of graduation ends, payments are level until the mortgage is paid off. (For two mortgages of equal size, maturity, and interest rate, GPM payments must level off above SFPM payments so that the discounted present values of the two payments streams will be identical.)

GPM's can be explained in terms of the U.S. Department of Housing and Urban Development's Experimental Finance Program, the vehicle used to introduce the FHA-insured GPM.[30] Borrowers wishing a GPM under this program choose one of five plans. Table 14 lists these plans and also shows that Plan III—which provides for the lowest first-year payments and the fastest rate of increase—is by far the most popular.

For an SFPM, payments during the early years of the mortgage go overwhelmingly to the payment of interest. With the low initial payments of a GPM, none of the early payments goes to principal repayment; in fact, payments are insufficient even to cover interest due. The shortfall between interest due and interest paid—negative amortization—is added to principal outstanding.

Negative amortization was responsible for three obstacles to the development and acceptance of GPM's. First, at the time the GPM program was initiated, more than 30 States had usury laws that prohibited the collec-

29. See William C. Melton and Diane L. Heidt, "Variable Rate Mortgages," *Federal Reserve Bank of New York Quarterly Review* 4 (Summer 1979): 24.

30. The Housing and Community Development Act of 1974 authorized the Federal Housing Administration to insure GPM's. Subsequent legislation liberalized several features of FHA-insured GPM's and stimulated their use. The Housing and Community Development Act of 1977 made the program permanent.

Table 14.—FHA-Graduated Payment Mortgage Plans

Plan	Rate at which payments increase each year (percent)	Period over which payments increase (years)	Reduction in first year payments [1] (percent)	Percent of sample total [2]
I	2½	5	9	5.8
II	5	5	17	7.9
III	7½	5	25	86.2
IV	2	10	12	.1
V	3	10	17	(3)

1. Compared with a standard fixed-payment mortgage of the same amount, interest rate, and maturity.
2. Based on a sample of 56,496 loans insured during 1980 by the Federal Housing Administration under section 245 of the National Housing Act.
3. Less than .05 percent.

Source: U.S. Department of Housing and Urban Development.

tion of interest on interest. This obstacle was dealt with in the Housing and Community Development Act of 1977, which provided for a limited preemption of these State laws for FHA's GPM's.

Second, the original legislation provided that at no time could the principal of a GPM exceed the maximum insurable loan amount that could have been authorized for an SFPM at the time of origination. To prevent negative amortization from driving principal above this amount. GPM borrowers had to make substantially larger downpayments than did SFPM borrowers. The 1977 act lowered this obstacle by replacing the 1974 provision with one that permitted principal to rise to 97 percent of the original appraised value of the house being purchased. The Housing and Community Development Amendments of 1979 further relaxed this constraint by applying the 97-percent figure to the projected value of the house, which, for this purpose, is assumed to rise 2½ percent per year.

Third, negative amortization creates tax problems for lenders who use the accrual method of accounting. FHA-insured GPM's are fixed-rate loans. A lender's accrued income is, thus, the interest income that would be generated by a comparable SFPM. Because the lender's cash income is less than this, the lender is liable for taxes on income that has not been received.[31]

Despite these problems, FHA's GPM program has grown rapidly; in 1980, FHA insured $4.8 billion of GPM's, compared with $9.5 billion of SFPM's (under Section 203(b)). Almost one-fourth of these GPM's were in California, a fact that complicates the comparison of national data on GPM's and SFPM's. (California is the only State where FHA-insured GPM activity exceeded FHA-insured SFPM activity in 1980.) It is clear, however, that GPM borrowers are generally younger than SFPM borrowers and have smaller incomes, but they take out larger mortgages and buy more expensive homes than SFPM borrowers (table 15). Moreover, a GPM borrower is more likely to purchase a newly built house than is an SFPM borrower; nationwide, 29 percent of GPM loans were made for the purchase of new houses, compared with only 12 percent of SFPM loans. (For California, the comparable figures are 26 percent and 21 percent, respectively.)

FHA's GPM program has stimulated the development of conventional GPM lending. Although no reliable data are available on the amount of conventional GPM lending, many observers seem to think that it is substantial and that a variation on the FHA theme has created the potential for even more rapid growth. The variation concerns the tax problems that negative amortization creates for lenders. Originators of conventional GPM's can finesse this problem rather simply by requiring that the borrowers place part of the loan proceeds in a pledged, interest-earning account at the lending institution. During the early years of the mortgage, funds are withdrawn from this account and used to prevent negative amortization. Lenders, therefore, receive a constant stream of payments and no wedge is driven between accrued and cash incomes. In addition, the device of the pledged account sidesteps State laws that prohibit the collection of interest on interest. (The Housing and Community Development Act of 1977 had preempted State laws in this regard only for FHA-insured loans.)

GPM's face no special problems on secondary markets and have been purchased by FNMA since shortly after they were introduced. Furthermore, the default rate on GPM's does not appear to differ much from the default rate on SFPM's, despite the

Table 15.—Selected Characteristics of FHA-Graduated Payment Mortgages and Standard Fixed-Payment Mortgages, 1980

Item	Graduated payment mortgage (GPM)	Standard fixed-payment mortgage (SFPM)
Total value of mortgage		
United States	$1.45 billion	$1.56 billion
California	.31 billion	.25 billion
Average mortgage size		
United States	$52,392	$58,557
California	66,872	64,641
Median acquisition cost		
United States	$59,238	$58,510
California	66,500	62,976
Median loan-to-value ratio		
United States	97.6 percent	92.6 percent
California	97.3 percent	91.5 percent
Average monthly mortgage payment [1]		
United States	$518.01	$570.65
California	639.07	695.57
Median borrower annual income		
United States	$26,150	$28,054
California	27,379	$1,032
Average age of borrowers [2]		
United States	29.8 years	31.3 years
California	31.0 years	32.8 years

1. Includes principal, interest, taxes, and insurance.
2. Married borrowers only.

NOTE.—Data are for new and proposed single-family home mortgages insured by FHA under section 245 (GPM's) and section 203 (SFPM's).

Source: U.S. Department of Housing and Urban Development.

31. Although not an impediment to the spread of GPM's, the tax treatment of a GPM borrower might be noted here. For a borrower who uses—as most individuals do—the cash method of accounting, the entire amount of GPM payments is deductible as interest payments until such time as the outstanding principal falls below the original loan amount. For a GPM-III borrower with a $30,000 mortgage, this occurs sometime in the eighth year of the mortgage. For the first 4 years of the GPM, interest deductions are smaller than for an SFPM with the same loan amount and interest rate. In years 5 through 8, deductions under the GPM are larger. If the income of the GPM borrower is rising over time—the presumption behind GPM's in the first place—then the borrower is moving into higher tax brackets and the value of a dollar's worth of deductions is increasing.

obvious potential for GPM payments to rise faster than borrowers' incomes.

Shared appreciation mortgages.—As is suggested by their name, the distinguishing feature of shared appreciation mortgages (SAM's)—is that the lender shares in the appreciation of the property securing the mortgage. SAM's differ from SFPM's in three important respects. First, the interest rate on a SAM is lower—typically much lower—than on an SFPM. Second, in return for this lower interest rate, the lender obtains a share in any increase in the value of the property securing the mortgage. The lender's share is termed "contingent interest." Third, although monthly payments on a SAM are calculated on the basis of a long amortization period, the loan itself becomes due and payable in no more than 10 years.

The lower interest rate on a SAM can result in substantially lower monthly mortgage payments and can, therefore, substantially increase the number of households that qualify for a mortgage. Potential borrowers, however, will be concerned about the unknown but possibly quite large amount of contingent interest that will have to be paid in no more than 10 years. Consider a $50,000 SAM, in which the lender's share is one-third, used to purchase a $62,000 house that subsequently appreciates 10 percent per year. At the end of 10 years, the house will have appreciated $99,600, so that the borrower will have to pay the lender a lump sum of $33,200 plus the unpaid principal of the mortgage. Refinancing this amount probably would not be a major problem for a borrower whose income had kept pace with inflation.

SAM's may appeal to first-time housebuyers. First-time buyers may not be able to make large enough downpayments on an SFPM to get mortgage payments they can afford. The reduced monthly payments under a SAM, therefore, could be important to them. SAM's may also appeal to elderly people for whom the investment aspect of housing is relatively unimportant.

From the lender's viewpoint, the contingent interest feature of SAM's provides a hedge against inflation, at least to the extent that house prices mirror the general level of prices in the economy. Also, the 10-year maturity of SAM's would shorten the average maturity of a lender's portfolio, reducing interest rate risk somewhat. During its term, however, a SAM has poor cash flow compared with an SFPM. While SAM's would probably be attractive to borrowers during periods of high interest rates, it is precisely during such periods that SAM's would be least attractive to thrift institutions because income from SAM's—given their low interest rates—would not be sufficient to allow thrifts to pay competitive rates on deposits. Investors with longer term liabilities, on the other hand, may find SAM's an attractive outlet for funds.

There are several problems to the spread of SAM's. First, buyers in secondary markets need some assurance that the originators have not systematically overestimated the probable appreciation of the property backing the SAM. Perhaps requiring the originator to retain a significant share of SAM's placed in pools would help in this regard. Second, it will probably be difficult for a lender to determine differential rates of probable appreciation for properties in different neighborhoods, yet such a determination is crucial if the expected rate of return on various SAM's are to be equal. Further, even if this determination is made and different interest rates are applied to different SAM's, a lender may be vulnerable to a charge (valid or not) of unlawful discrimination.

Table 16.—Payments and Outstanding Balances for a Price Level Adjusted Mortgage and a Standard Fixed-Payment Mortgage

[Dollars]

Year	Standard fixed-payment mortgage (SFPM)			Price level adjusted mortgage (PLAM)		
	Monthly payment		Outstanding balance end of year	Monthly payment		Outstanding balance end of year
	Nominal	Real		Nominal	Real	
1	592	592	49,538	289	289	54,081
2	592	539	49,780	263	239	58,328
3	592	490	49,596	239	220	62,889
4	592	445	49,419	218	200	67,725
5	592	405	49,216	345	239	78,212
10	592	261	47,642	563	289	102,172
20	592	97	38,158	1,466	289	158,615
25	592	45	12,839	3,129	239	79,272
29	592	42	6,586	8,442	289	44,470
30	592	37	0	2,787	289	0

Note.—Both mortgages are for $50,000. The interest rate on the SFPM is 14 percent; the interest rate on the PLAM is 4 percent. The inflation rate is assumed to average 10 percent during the 30-year term of each mortgage.

Source: Henry J. Cassidy, "Price-Level Adjusted Mortgages Versus Other Mortgage Instruments," *Federal Home Loan Bank Board Journal* 14 (January 1981): 4.

A final problem with SAM's is related to improvements made in the property by the owner. The cost of capital improvements would probably be subtracted from gross appreciation in order to determine contingent interest. Many improvements, however, add less to the value of a house than they cost. Improvements, therefore, make lenders' returns on SAM's more uncertain.[32]

Price level adjusted mortgages.—The final alternative mortgage instrument to be discussed—the price level adjusted mortgage (PLAM)—is still in the discussion stage. Its distinctive feature is that payments are constant in real terms. This result follows from two elements of the mortgage contract. First, the contract interest rate is set at the rate that would prevail if no inflation were expected and is held constant for the life of the mortgage. This element, by itself, results in low monthly payments. Second, the real value of the outstanding mortgage balance is maintained by raising the nominal value of the mortgage balance by a factor equal to the rate of inflation. This element insulates lenders from inflation.

Table 16 contrasts the monthly payments under a PLAM with the payments under a SFPM of equal amount and maturity. While the SFPM entails monthly payments that are constant in nominal terms, the PLAM's are constant in real terms. The

(continued on p. 58)

32. Joseph A. McKenzie, "Shared Appreciation Mortgages," *Federal Home Loan Bank Board Journal* 13 (November 1980): 13–14. Much of this discussion of SAM's is based on McKenzie's article.